1	0.211	14	0.078
2	0.368	15	0.584
3	0	16	0.528
4	0.789	17	0.634
5	0.579	18	women
6	5:14 0.263	19	0.182
7	3:16 0.158	20	0.222
8	0.040	21	0.146
9	0.619	22	men
10	0.240	23	0.053
11	0.760	24	0.414
12	0.002	25	solutions
13	0.922		25 ✓

East Los Angeles College
Department of Mathematics
Math 227
Test 2

Show all work for credit and approximate all probabilities to the nearest **thousandths.**

The following table represents the distribution of marbles.

Color	Number
Yellow	10
Green	14
Blue	8
Purple	6
Total	38

If you select a marble at random, what's the probability the marble is:

1) Blue?
2) Green?
3) Orange?
4) Non-Blue?
5) Blue or Green?

What's the odds for selecting:

6) Yellow?
7) Purple?

If you select two different marbles, what's the probability the marbles are:

8) Both Blue?
9) Both non-Blue?

If you select three different marbles at random, what's the probability:

10) None are Green?
11) At least one is Green?

A bin of 800 iPhones contains phones that are defective and non-defective. Past experience indicates that 4% of the iphone's are defective. If you select two different iphones at random, what's he probability:

12) Both are defective?
13) Both are non-defective?
14) At least one is defective?

The following table represents degree data from a random sample at a local university.

Degree	Bachelor	Masters	PhD	Total
Men	38	18	16	72
Women	52	18	12	82
Total	90	36	28	154

If you select a graduate at random, what's the probability the graduate earned:

15) Bachelor's degree?
16) Bachelor's degree given that the graduate was a man?
17) Bachelor's degree given that the graduate was a woman?
18) What gender was more likely to earn a bachelor's degree?
19) PhD?
20) PhD given that the graduate was a man?
21) PhD given that the graduate was a woman?
22) What gender was more likely to earn a PhD?

If you select two different graduates at random, what's the probability:

23) They both earned a Master's Degree?
24) At least one earned a Master's Degree?
25) What is your name?

math 227 Test 2

① $P(b) = \frac{n(b)}{n(S)}$; $P(b) = \frac{8}{38}$

≈ 0.211

② $P(G) = \frac{n(G)}{n(S)}$; $P(G) = \frac{14}{38}$

≈ 0.368

③ $P(O) = \frac{n(O)}{n(S)}$; $P(O) = \frac{0}{38}$; $P(O) = 0$

④ $P(\text{not } b) = 1 - P(b)$

$= 1 - 0.211$;

≈ 0.789

⑤ $P(b \text{ or } g) = P(b) + P(g) - P(\text{both})$

$= 0.211 + 0.368 - 0$

≈ 0.579

⑥ $P(y) = \frac{n(y)}{n(S)}$; $P(y) = \frac{10}{38}$

$P(y) \approx 0.263$

⑦ $P(p) = \frac{n(p)}{n(S)}$; $P(p) = \frac{6}{38}$

$P(p) \approx 0.158$

(8) $p(\text{both blue}) = p(\text{1st b and 2nd b})$

$= p(\text{1st b}) \, p(\text{2nd b} \mid \text{1st b})$

$= \frac{8}{38} \cdot \frac{7}{37}$

≈ 0.040

(9) $p(\text{both non blue})$

$= p(\text{1st not b and 2nd not b})$

$= p(\text{1st not b}) \, p(\text{2nd not b} \mid \text{1st not b})$

$= \frac{30}{38} \cdot \frac{29}{37}$

≈ 0.619

(10) $p(\text{none are G}) = p(\text{1st not G and 2nd not G and 3rd not G})$

$= p(\text{1st not G}) \, p(\text{2nd not G} \mid \text{1st not G}) \, p(\text{3rd not G} \mid \text{1st not G and 2nd not G})$

$= \frac{24}{38} \cdot \frac{23}{37} \cdot \frac{22}{36}$

≈ 0.240

(11) p(at least one is G) = 1 − p(none are G)

$= 1 - 0.240$

≈ 0.760

(12) 800

4% defective ; 4% of 800 $= 0.04 \cdot 800$

$= 32$ def

ie, 32 defective

768 OK

$p(\text{both def}) = p(\text{1st def and 2nd def})$

$= p(\text{1st def}) \cdot p(\text{2nd def} \mid \text{1st def})$

$= \frac{32}{800} \cdot \frac{31}{799}$

≈ 0.002

(13) $p(\text{both OK}) = p(\text{1st OK and 2nd OK})$

$= p(\text{1st OK}) \cdot p(\text{2nd OK})$

$= \frac{768}{800} \cdot \frac{767}{799}$

≈ 0.922

(14) p(at least one def) = 1 − p(none are def)

$= 1 - 0.922 \approx 0.078$

(15) $P(B) = \frac{n(B)}{n(S)}$

$= \frac{90}{154} \approx 0.584$

(16) $P(B|m) = \frac{n(B \text{ and } M)}{n(m)}$

$= \frac{38}{72} \approx 0.528$

(17) $P(B|w) = \frac{n(B \text{ and } w)}{n(w)}$

$= \frac{52}{82} \approx 0.634$

(18) women

(19) $P(phd) = \frac{n(phd)}{n(S)}$

$= \frac{28}{154} \approx 0.182$

(20) $P(phd|m) = \frac{n(phd \text{ and } m)}{n(m)}$

$= \frac{16}{72} \approx 0.222$

(21) $P(\text{phd} \mid w) = \frac{n(\text{phd and } w)}{n(w)}$

$= \frac{12}{82} \approx 0.146$

(22) men

(23) $P(\text{1st m and 2nd m}) = P(\text{1st m}) \, P(\text{2nd m} \mid \text{1st m})$

$= \frac{36}{154} \cdot \frac{35}{153}$

≈ 0.053

(24) P(at least one m)

$= 1 - P(\text{none have m})$

$= 1 - P(\text{1st non m and 2nd non m})$

$= 1 - P(\text{1st non m}) \, P(\text{2nd non m} \mid \text{1st non m})$

$= 1 - \frac{118}{154} \cdot \frac{117}{153}$

$= 0.414$